UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKASHI TAKEDA,
KENJI ONO, and
SUSUMU MIYAZAKI

Appeal 2009-003716
Application 10/525,014
Technology Center 1700

Decided[1]: July 8, 2009

Before CHUNG K. PAK, KAREN M. HASTINGS, and MICHAEL P. COLAIANNI, *Administrative Patent Judges.*

PAK, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claim 5. Claims 3, 4, and 6, the other pending claims in the

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

above-identified application, were indicated to be allowable by the Examiner. We have jurisdiction under 35 U.S.C. § 6(b).[2]

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal "relates to a phosphor and a vacuum ultraviolet radiation excited light-emitting device comprising the phosphor" and more particularly "to the phosphor having high luminescence when excited by vacuum ultraviolet ray and to the vacuum ultraviolet radiation excited light-emitting device comprising the phosphor" (Spec. 1, ll. 7-14). According to page 1, lines 16-17, of the Specification:

> Phosphors are used in a vacuum ultraviolet radiation excited light-emitting devices such as plasma display panels... and rare gas lamps. Phosphors which emit lights under excitation with vacuum ultraviolet rays have already been known.

Details of the appealed subject matter are recited in claim 5, the only claim on appeal, which is reproduced below:

5. A vacuum ultraviolet radiation excited light-emitting device comprising a phosphor represented by formula

$$(M^1_{1-e}Ln^2_e)_3(M^2_{1-f}Ln^1_f)_2M^3_6O_{18}$$

wherein M^1 is at least one metal element selected from the group consisting of Ca, Sr, and BA, M^2 is at least one metal element selected from the group consisting of Y, La, Gd, and Lu, M^3 is at least one metal element selected from the group consisting of Si and Ge and oxygen, Ln^1 is at least one metal element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Tb Dy, Ho, Er, Tm, Yb, and Mn, Ln^2 is at least one element selected from the

[2] An oral hearing was held on June 9, 2009.

group consisting of Sm, Eu, Yb, and Mn, e is from 0 to 0.5, f is from 0 to 0.5, and the sum of e and f is not less than 0.

The Examiner relied upon the following prior art reference as evidence of anticipation:

Konijnendijk	EP 0 021 536 A1	Jan. 7, 1981

The Examiner further relied upon the following references to explain the teaching of Konijnendijk:

Shiramizu	US 2002/0023670 A1	Feb. 28, 2002
Srivastava	US 6,982,046 B2	Jan. 3, 2006
Sawada	US 2007/0072093 A1	Mar. 29, 2007

Appellants relied upon the following literature:

Shigeo Shionoya et al (Shionoya), Phosphor Handbook, "Luminescence properties," p. 727 (unknown publication date).

The Examiner rejected claim 5 under 35 U.S.C. § 102(b) as anticipated by the disclosure of Konijnendijk (Ans. 3-4).

ISSUE AND CONCLUSION

Have Appellants identified reversible error in the Examiner's finding that Konijnendijk teaches the claimed vacuum ultraviolet radiation excited light-emitting device within the meaning of 35 U.S.C. § 102(b)? On this record, we answer this question in the negative.

FINDINGS OF FACT

1. Appellants do not dispute the Examiner's finding that Konijnendijk teaches silicate-based phosphor compositions corresponding to those

claimed and their use in low-pressure mercury vapor lamps. (*Compare* Ans. 3 with App. Br. 9-13).

2. Konijnendijk teaches that its silicate-based phosphor compositions are used to form "luminescent screens and lamps" (p. 1, ll. 1-2).

3. Konijnendijk teaches that the phosphor compositions (luminescent materials) "can be properly excited, for examply [sic., example,] by ultra-violet radiation, in particular by short-wave ultra-violet radiation" (p. 2, ll. 15-19).

4. Konijnendijk teaches that "[o]n excitation by the short-wave ultra-violet radiation from a low-pressure mercury vapour discharge lamp (predominantly 254 nm), the silicate luminesced efficiently . . . (p. 7, ll. 3-6).

5. Shionoya relied upon by Appellants teaches (p. 727) that:

> The wavelength region between about 0.2 and 200-nm is called the vacuum-ultraviolet (abbreviated to VUV) region; most of the VUV spectrometers need to be evacuated in this region because of the opacity of oxygen in air to this radiation.

6. Srivastava explains (col. 1, ll. 21-32) (emphasis added) that:

> A drawback of known mercury low-pressure gas discharge lamps resides in that the action of UV radiation having very short wavelengths on the phosphor coating, the recombination of mercury ions and electrons on the phosphor surface, or the incidence of excited mercury atoms and electrons on the phosphor layer causes the emissivity of the phosphors to decrease in the course of time. This emissivity loss results in a reduction of the electro-optical efficiency in the course of the service life of the lamp. This degradation is particularly substantial under the influence of VUV (vacuum UV) radiation having a wavelength below 200 nm, and manifests itself as a shift of the color of light.

> Therefore, effort has been devoted to finding means to reduce the damaging effect of *VUV radiation on the phosphors of mercury discharge lamps.*

7. Sawada explains (p. 5, paras 0055 and 0056)(emphasis added) that:

> The wavelength of the vacuum-ultraviolet light is usually set into the range of 100 nm to 250 nm. The wavelength of the vacuum-ultraviolet light used in the invention is preferably set into the range of 150 nm to 200 nm.
>
> A light source for *the vacuum-ultraviolet light may be selected from an excimer lamp, a low-pressure mercury lamp,* and other various light sources.

8. Shiramizu explains in the Description of the Related Art section that the term "vacuum ultraviolet light" includes a wavelength of 254 nm in an ozone atmosphere (p. 1, para 0008).

9. Shiramizu further explains (p. 2, para. 0030)(emphasis added) that:

> Prior art of removing organic matters in general includes one that employs UV/ozone gas, wherein *vacuum ultraviolet light of wavelengths 254 nm, 185 nm, etc. emitted by a low pressure mercury lamp are used.*

PRINCIPLES OF LAW

In making a patentability determination, analysis must begin with the question, "*what* is the invention *claimed*?" since "[c]laim interpretation, . . . will normally control the remainder of the decisional process." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567-68 (Fed. Cir. 1987). Claim terms are given their broadest reasonable construction consistent with the specification during patent prosecution. *In re Icon Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007)("[T]he PTO must give claims their broadest reasonable construction consistent with the specification. . . .

Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation."); *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004) ("[T]he PTO gives a disputed claim term its broadest reasonable interpretation during patent prosecution."). When the Specification does not contain express definitions for the disputed claim terms, "the fact that appellants can point to definitions or usages [in extrinsic evidence] that conform to their interpretation does not make the PTO's definition unreasonable when the PTO can point to other sources that support its interpretation." *In re Morris*, 127 F.3d 1048, 1056 (Fed. Cir. 1997)

This longstanding broadest reasonable interpretation principle is based on the notion that "during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed." *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989). That is, a patent applicant has the opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application. "Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process." *Zletz*, 893 F.2d at 322. "[A]s applicants may amend claims to narrow their scope, a broad construction during prosecution creates no unfairness to the applicant or patentee." *Icon Health*, 496 F.3d at 1379.

Although a patent applicant is entitled to be his or her own lexicographer of patent claim terms, the applicant must provide definitions for such claim terms in the Specification with sufficient clarity to provide a person of ordinary skill in the art with clear and precise notice of the

meaning that is to be construed. *In re Corr,* 347 F.2d 578, 580 (CCPA 1965) Otherwise, limitations appearing in the specification but not recited in the claim are not read into the claim. *E-Pass Techs., Inc. v. 3Com Corp.,* 343 F.3d 1364, 1369 (Fed. Cir. 2003).

Under 35 U.S.C. § 102(b), anticipation is established only if "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc., v. Union Oil Co. of California,* 814 F.2d 628, 631 (Fed. Cir. 1987).

"[W]hen the PTO shows sound basis for believing that the products [devices] of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) (*citing In re King,* 801 F.2d 1324, 1327 (Fed. Cir. 1986); *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977) (When "the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product."). "'[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. . . . Whether the rejection is based on 'inherency' under 35 U.S.C. § 102, on 'prima facie obviousness' under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same . . . [footnote omitted].'" *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980) (*quoting In re Best*, 562 F.2d at 1255).

"[T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims. *In re Schreiber*,

128 F.3d 1473, 1478 (Fed. Cir. 1997). Yet, choosing to define functionally, i.e., by what it does, carries with it a risk. *Schreiber*, 128 F.3d at 1478. As our reviewing court stated in *Schreiber*, 128 F.3d at 1478 *quoting In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971):

> Where the patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

Moreover, "extrinsic evidence may be considered when it is used to explain, but not to expand, the meaning of a reference." *In re Baxter*, 952 F.2d 388, 390 (Fed. Cir. 1991). As stated by our reviewing court:

> It is sometimes appropriate to consider extrinsic evidence to explain the disclosure of a reference. Such factual elaboration is necessarily of limited scope and probative value, for a finding of anticipation requires that all aspects of the claimed invention were already described in a single reference: a finding that is not supportable if it is necessary to prove facts beyond those disclosed in the reference in order to meet the claim limitations. The role of extrinsic evidence is to educate the decision-maker to what the reference meant to persons of ordinary skill in the field of the invention, not to fill gaps in the reference. . . . If it is necessary to reach beyond the boundaries of a single reference to provide missing disclosure of the claimed invention, the proper ground is not § 102 anticipation, but § 103 obviousness.

Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1576-1577 (1991).

ANAYLSIS

Appellants do not dispute the Examiner's finding that Konijnendijk teaches low-pressure mercury lamps comprising silicate-based phosphor compositions corresponding to those claimed phosphor compositions. According to Konijnendijk, the phosphor compositions in these low pressure mercury lamps, like those of Appellants' vacuum ultraviolet radiation excited light-emitting devices, can be excited by ultra-violet radiation, in particular by short-wave ultraviolet radiation (the short-wave ultraviolet wavelength is defined as 254 nm). Thus, the Examiner has a sound basis or reason to believe that Konijnendijk's low-pressure mercury lamps possess the claimed functional characteristic i.e., devices possessing the claimed "vacuum ultraviolet radiation excited light-emitting" function.

Appellants rely on Shionoya to rebut the Examiner's prima facie case of anticipation. Shionoya states (p. 727) that:

> The wavelength region between about 0.2 and 200-nm is called the vacuum-ultraviolet (abbreviated to VUV) region; most of the VUV spectrometers need to be evacuated in this region because of the opacity of oxygen in air to this radiation.

However, nowhere does Shionoya state that Konijnendijk's low-pressure mercury lamps do not possess the claimed "vacuum ultraviolet radiation excited light-emitting" function. We initially note that Konijnendijk's low-pressure mercury lamps can be excited by ultraviolet radiation in general, not just by short-wave ultraviolet radiation (254 nm). Secondly, we note that the vacuum ultraviolet light region defined by Shionoya does not exclude a wavelength of 254 nm in an *ozone* atmosphere. Thus, on this record, Appellants simply have not shown that Konijnendijk's low-pressure

mercury lamps do not possess the claimed "vacuum ultraviolet radiation excited light-emitting" function.

Shiramizu, Sawada, and Srivastava referred to by the Examiner also explain that Konijnendijk's low-pressure mercury lamps necessarily or inherently possess the claimed "vacuum ultraviolet radiation excited light-emitting" function. For instance, Shiramizu explains in the Description of the Related Art section that the term "vacuum ultraviolet light" is also used to include a wavelength of 254 nm in an ozone atmosphere. Shiramizu also discloses (p. 2, para. 0030) (emphasis added) that:

> Prior art of removing organic matters in general includes one that employs UV/ozone gas, wherein *vacuum ultraviolet light of wavelengths 254 nm, 185 nm, etc. emitted by a low pressure mercury lamp are used.*

Consistent with the above disclosure of Shiramizu, both Sawada, and Srivastava further explain that lower-pressure mercury lamps possess the claimed vacuum-ultraviolet light emitting function.

Thus, based on the totality of record, including due consideration of Appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of anticipation within the meaning of 35 U.S.C. § 102(b).

DECISION

The decision of the Examiner rejecting claim 5 under 35 U.S.C. § 102(b) is affirmed.

AFFIRMED

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